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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,927	07/21/2003	Kaoru Shimbara	P/2699-27	6477

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EXAMINER

CULBERT, ROBERTS P

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,927

Applicant(s)

SHIMBARA ET AL.

Examiner

Roberts Culbert

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) 17-67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 9-16 is/are objected to.
- 8) ☒ Claim(s) 1-67 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/21/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-16, drawn to a method of etching a substrate, classified in class 216, subclass 91.
- II. Claims 17-36, drawn to an etching apparatus, classified in class 156, subclass 345.11.
- III. Claims 37-47, drawn to an etching apparatus, classified in class 156, subclass 345.11.
- IV. Claims 48-55, drawn to an etching method, classified in class 216, subclass 91.
- V. Claims 56-65, drawn to an etching apparatus, classified in class 216, subclass 345.11.
- VI. Claim 67, drawn to a method of rotating a substrate, classified in class 414, subclass 935.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process as claimed can be practiced by a different apparatus or by hand, such as manually clamping without a controller. The apparatus as claimed can be used to practice another and materially different process such a single rotation process without unclamping the substrate.

Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process as claimed can be practiced by another materially different apparatus such as an apparatus having clamping members independent of the rotary member. The apparatus as claimed can be used to practice another and materially different process such as a rotation process in which the substrate is completely or slightly released from all of the clamping members.

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Inventions I and V are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as an apparatus that independently controls rotation and clamping instead of using a link mechanism.

Inventions IV and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as rotating and processing a substrate without releasing the substrate. The process as claimed can be practiced by another materially different apparatus such as an apparatus without a controller

Inventions IV and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus or by hand, such as releasing and clamping by hand without a controller, or by using separate controllers for clamping and releasing, instead of using a single controller.

Inventions IV and V are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus, such as an apparatus that uses a sensor and motor to convert rotation with clamping/unclamping instead of a cam member and cam follower.

Inventions VI and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially

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different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as a process that uses a single operation mode.

Inventions VI and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as a process that uses a single operation mode.

Inventions VI and V are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case In this case the process as claimed can be practiced by another materially different apparatus such as an apparatus that uses a sensor and motor to convert rotation with clamping/unclamping instead of a cam member and cam follower.

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention III has separate utility such as rotating a complete or slightly released substrate. See MPEP § 806.05(d).

Inventions II and V are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention V has separate utility such as clamping a substrate using a cam member and cam follower. See MPEP § 806.05(d).

Inventions III and V are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention III has separate utility such as rotating a completely or slightly released substrate. See MPEP § 806.05(d).

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Inventions I and VI are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as performing a substrate rotation process without switching operating mode between active and inactive modes. Invention II has separate utility such as performing a single rotation process without releasing clamping members. See MPEP § 806.05(d).

Inventions IV and VI are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention IV has separate utility such as performing a substrate rotation process without switching operating mode between active and inactive modes. See MPEP § 806.05(d).

Inventions I and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation. Invention I requires three separate rotation processes in which the substrate is not released from the clamps, and invention III uses a "complete/slight" release controller that releases the clamps from the substrate.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and/or recognized divergent subject matter, the search required for one Group is not required for the other Groups, and searching multiple groups of claims would place a serious and undue burden on the examiner, restriction for examination purposes as indicated is proper.

During a telephone conversation with James Finder on 1/6/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-16. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-67 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named

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inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

Claim 8 is objected to because of the following informalities: Claim 8 contains the word "switchably". The word is unclear because it is not defined by the specification and does not have a dictionary definition. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

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examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,683,007 to Yamasaki et al.

Yamasaki et al. teaches a substrate treatment method for treating a substrate by supplying a treatment liquid to the substrate while rotating the substrate, the method comprising the steps of performing a first substrate rotation process for rotating the substrate while clamping the substrate by a first clamping member set (40) including at least two clamping members; and performing a third substrate rotation process by unclamping the substrate from the first clamping member set for rotating the substrate while clamping the substrate by the second clamping member set (41). See Column 14, Lines 10-17 of Yamasaki et al.

Yamasaki does not explicitly teach performing a second substrate rotation process after the first substrate rotation step for rotating the first substrate substrate while clamping the substrate by the first clamping member set and a second clamping member set provided performing a separately from the first clamping member set and including at least two clamping members.

However, it is inherent in the method of Yamasaki et al. that in order to successfully switch from the first set of clamping members to the second set of clamping members as described, it would be necessary to clamp the second set of clamping members before releasing the second set of clamping members in order to hold the substrate in place while shifting the holding position during the etching process as described by Yamasaki et al.

Alternatively, It would have been obvious to one of ordinary skill in the art at the time of invention to clamp the second set of clamping members before releasing the second set of clamping members in order to hold the substrate in place while shifting the holding position during the etching process in order to successfully switch from the first set of clamping members to the second set of clamping members as described by Yamasaki et al.

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The moment of switching from a first clamping member set to a second clamping member set is performing a second substrate rotation process after the first substrate rotation step and before the third substrate rotation step for rotating the first substrate while clamping the substrate by the first clamping member set and a second clamping member set provided separately from the first clamping member set and including at least two clamping members.

Regarding Claims 2-4, Yamasaki et al. teaches at least three pins in the first and second clamping member sets.

Regarding Claim 5, Yamasaki teaches supplying a treatment liquid to a surface of the substrate during the first and third rotation steps.

Regarding Claim 6, Yamasaki teaches supplying an etching liquid for etching away unnecessary substance from a peripheral edge portion of the substrate.

Claim 7 is rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,683,007 to Yamasaki et al. in view of JP 10249613 A to Yuasa.

Regarding Claim 7, as applied above, Yamasaki et al teaches the method of the invention substantially as claimed but does not teach supplying the treatment liquid to the substrate and then performing spin drying in the first second and third rotation steps.

Yuasa teaches that rotating pin holders are used in the wafer processing arts for etching, cleaning and drying processes. (Refer to Abstract)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the spin chuck of Yamasaki to perform a spin-drying process after etching.

The motivation to perform spin-drying using the pin chuck of Yamasaki is that the portions of the wafer covered by the pins may be dried after a liquid etching or cleaning process.

Claim 8 is rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,683,007 to Yamasaki et al. in view of JP 2003088793 A to Niihara.

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Regarding Claim 8, as applied above, Yamasaki et al teaches the method of the invention substantially as claimed but does not teach clamping members of at least one of the first clamping member set and the second clamping member set each have at least two abutment portions which are selectively brought into abutment against the substrate, and switchably bringing the at least two abutment portions into abutment against the substrate.

Niihara teaches a method of holding a substrate in which clamping members have two abutment portions which are selectively brought into abutment against the substrate, and switchably bringing the at least two abutment portions into abutment against the substrate.

It would have been obvious to one of ordinary skill in the art at the time of invention to provide the clamping members have two abutment portions which are selectively brought into abutment against the substrate, and switchably bringing the at least two abutment portions into abutment against the substrate in order to provide a substrate holder in which dust is not produced by abrasion as suggested by Niihara.

Allowable Subject Matter

Claims 9-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach a method of rotating a substrate including alternately bringing first, second and third abutment portions into contact with a substrate in a five step rotation process as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (7:30-4:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. Culbert



GREGORY MILLS

Supervisor
TECHNICAL SERVICES